WHAT IS CLAIMED IS:

1. A process for evaluating donor bone suitability for implant preparation, comprising:

a. imaging a bone using a three-dimensional imaging scan at one or more sites of the bone;

b. measuring the bone parameters from the scan image; and

c. assessing the bone's suitability for fabrication into a given implant configuration based on the measured parameters.

2. The process of Claim 1 wherein the bone is registered or oriented in space before cutting.

3. The process of Claim 1 wherein the implant configuration is marked on the bone.

4. The process of Claim 1,and further comprising: formulating an implant cutting plan after assessing the bone's suitability for fabrication into a given implant configuration based on the measured parameters.

5. The process of Claim 4 wherein the bone is cut into implants based on the implant cutting plan.

6. The process of Claim 4 where the cutting plan is formulated from a computer based model

7. The process of Claim 6 where the model is scalable.

8. The process of Claim 5 wherein the bone is cut manually.

9. The process of Claim 5 wherein the bone is cut by an automated device.

10. The process of Claim 1 wherein the imaging step comprises scanning by computed tomography.

11. The process of Claim 1 wherein the imaging step comprises scanning by peripheral computed tomography.

12. The process of Claim 1 wherein the imaging step comprises scanning by magnetic resonance imaging.

13. The process of Claim 1 wherein the imaging step comprises scanning by gamma-ray computed tomography.

14. A process for evaluating donor bone suitability for implant preparation, comprising:

a. imaging the bone using three-dimensional image scanning at one or more sites on the bone;

b. extrapolating from morphometric measurements to dimensions at another skeletal site on the same or another bone;

c. determining the bone's suitability for implant geometries.

15. The process of Claim 14, and further comprising: marking an implant configuration on the bone.

16. The process of Claim 14, and further comprising: formulating an implant cutting plan after assessing the bone's suitability for implant geometrics.

17. The process of Claim 15 wherein the bone is cut into implants based on the implant configuration.

18. The process of Claim 17 wherein the bone is cut manually.

19. The process of Claim 17 wherein the bone is cut by a computer assisted device.

20. The process of Claim 14 wherein the imaging step comprises producing the image by computed tomography.

21. The process of Claim 14 wherein the imaging step comprises producing the image by peripheral computed tomography.

22. The process of Claim 14 wherein the imaging step comprises producing the image by magnetic resonance imaging.

23. The process of Claim 14 wherein the imaging step comprises producing the image by gamma-ray computed tomography.

24. A process for evaluating donor bone suitability for implant preparation comprising non-destructively assessing cortical thickness at one or more pre-selected sites of the bone.

25. The process of Claim 24 including measuring the bone to within +/- 0.005mm accuracy.

26. The process of Claim 24 including measuring the bone to within +/- 0.01mm accuracy.

27. The process of Claim 24 including measuring the bone to within +/- 0.1mm accuracy.

28. The process of Claim 24 including measuring the bone to within +/- 0.5mm accuracy

29. The Process of Claim 24 including measuring the bone to within +/- 1.0mm accuracy.

30. The process of Claim 1 wherein said process is employed as a method for determining critical attributes of bone related to predetermined release specifications for the bone for either processing or final product specifications.

31. The process of Claim 14 wherein said process is employed as a method for determining critical attributes of bone related to predetermined release specifications for the bone for either processing or final product specifications.

32. A method of formulating a bone implant cutting plan, comprising:

assessing three dimensional morphometric measurements of said bone, whereby said measurements specify data regarding the fabrication of a given implant configuration based on said measurements.

33. The method of Claim 32 wherein said measurements are derived from a model selected from the group consisting of a mathematical model, a statistical model, a neural network model, and a computer model.

34. The method of Claim 32 wherein said cutting plan identifies cutting locations on said bone.

35. The method of Claim 32 wherein said cutting plan identifies bone which may be processed to provide a subset of bone implants having one or more specified dimensional, strength, or physical characteristics.

36. The method of Claim 32 wherein said cutting plan identifies dimensions and shapes which may be obtained from bone having specified morphometric measurements.